Instruments and Codes used:

* DMSP SSJ/4 data provide a complete energy spectrum of the low energy particles that cause the aurora and other high latitude phenomena
* DMSP satellites are in a sun-synchronous, low altitude polar orbit. The orbital period is 101 minutes and the nominal altitude is 830 km.
* The data set consists of electron and ion particle fluxes between 30 eV and 30 KeV recorded every second

Characteristics of the Aurora

* Particle precipitation:
  + charged particles(e- and p) precipitate from the magnetosphere into the upper atmosphere, they collide with the tenuous gases there, can excite them and create aurora

Data Analysis (1)

* Note how electron energy flux corresponds to conductivity. Higher energy flux will cause ionization and heating which will affect the intensity of the conductivity.

Bz Conditions:

* Bz positive
  + When the solar wind magnetic field is oriented northward, reconnection does not occur on the dayside magnetopause. Instead, anti-parallel reconnection occurs just tailward of the Earth, inducing a very different ionospheric convection pattern.
* Bz negative
  + A southward solar wind magnetic field produces anti-parallel reconnection at the dayside magnetopause. In the polar cap ionosphere, magnetic field lines are open to the solar wind, and ionospheric flow from local noon to local midnight corresponds to magnetospheric flow of open field lines from the dayside magnetopause into the magnetotail.
* The mean gets larger with larger negative bz values. Makes sense because ther

Next Step

Blah blah

Why is this alignment important? Well

Eventually…

* Want to calculate Joule heating
* Large ion drift corresponds to large Electric field
* Large electron flux corresponds to large Pederson conductance
* Alignment will render greater energy input in form of Joule heating